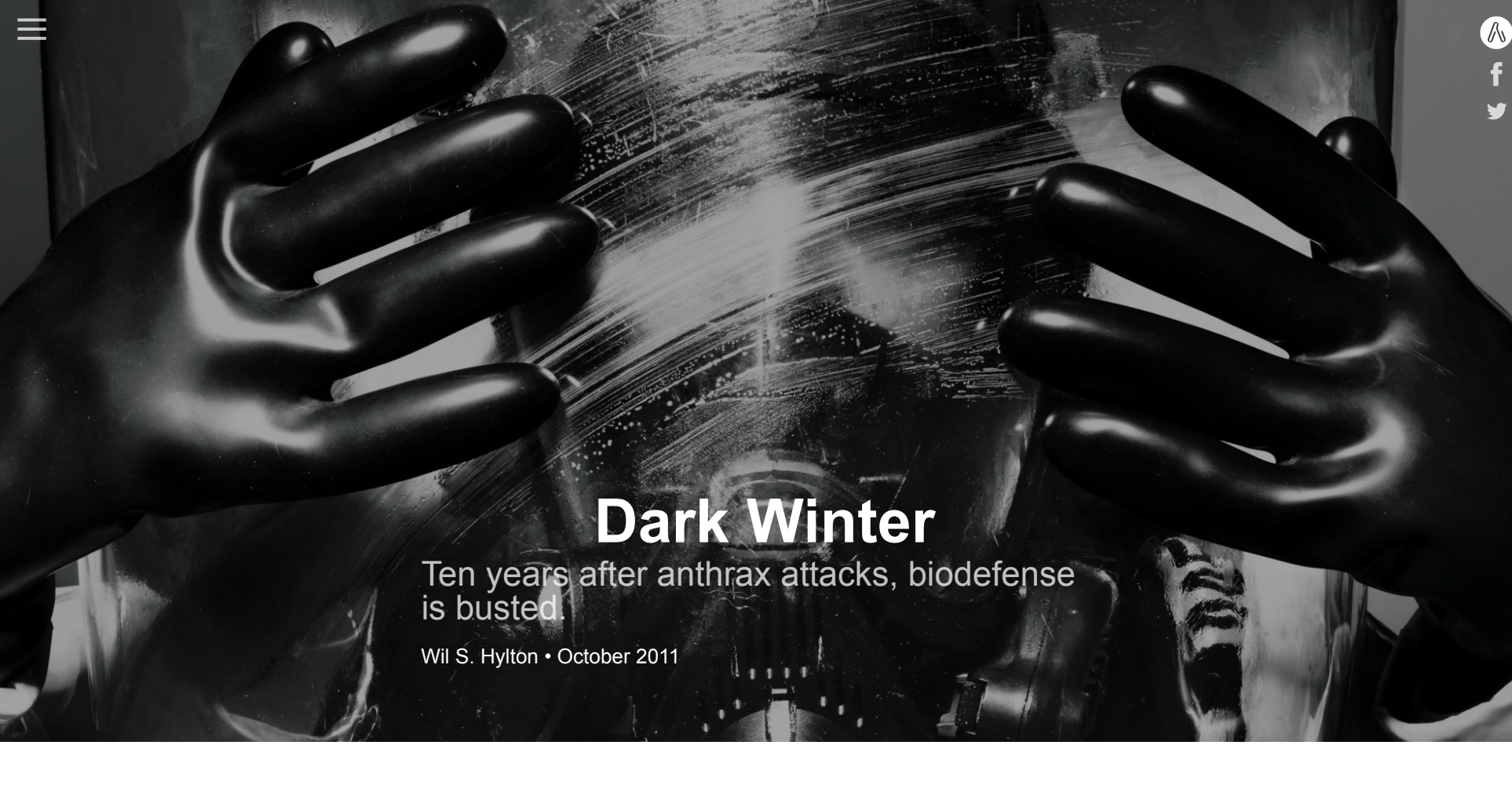

Dark Winter

Ten years after anthrax attacks, biodefense is busted.

Wil S. Hylton • October 2011

This article originally appeared in The New York Times Magazine *and is reprinted on Longform by permission of the author.*

A FEW DAYS AFTER 9/11, a retired Air Force colonel named Randall Larsen entered the northwest gate of the White House, crossed a courtyard to the Eisenhower Executive Office Building, stepped through the front door and stopped dead in his tracks.

In place of the usual security checkpoint, there was an elaborate upgrade that included not only metal detectors but also machines to sniff out radiation and explosives, elaborate pat-downs and a mandatory search of all personal belongings. It was the search that worried Larsen most.

After passing through a body scan, he stood quietly while a guard thumbed through the contents of his briefcase. It was mostly books and papers, but after a few seconds, the agent pulled out a respirator mask and shot Larsen a quizzical look. “That’s just for demonstration,” Larsen said quickly. “You saw Mayor Giuliani wear one at ground zero, right?” The agent turned the mask over a few times, then stuffed it back in the briefcase. Seconds later, Larsen was through.

Inside the building, he followed a long corridor to a room where Vice President Dick Cheney and members of the national-security staff soon joined him. Also in the room were Tara O’Toole, who is now the Obama administration’s top official for biodefense research at the Department of Homeland Security, and Thomas Inglesby, who runs the Center for Biosecurity. Three months earlier, Larsen, O’Toole and Inglesby collaborated on a national-security exercise to simulate the effects of a smallpox attack. Now, with the twin towers in ashes, they had come to brief the vice president on their findings.

As O’Toole began the presentation, Larsen studied Cheney’s expression. The vice president showed no reaction as O’Toole listed the officials who participated in the simulation, the complications they encountered as they tried to develop an emergency response and the arguments that broke out as they watched the disease spread beyond control. She concluded by telling the vice president that the country was unprepared for a biological attack.

Cheney nodded. “O.K.,” he said. “But what are we looking for? What does a biological weapon look like?”

At this, Larsen reached into his briefcase and pulled out a small test tube. “Mr. Vice President,” he said, “it looks like this.” Inside the tube was a weaponized powder of Bacillus globigii, almost genetically identical to anthrax. “And by the way,” Larsen said, “I just smuggled this into your office.”

At one of the most secure buildings in the world, in a moment of unprecedented alarm, the White House guards had searched Larsen’s briefcase — and never even saw the powder. “They were looking for the wrong things,” Larsen says now. “They still are.”

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THE SPECTER OF a biological attack is difficult for almost anyone to imagine. It makes of the most mundane object, death: a doorknob, a handshake, a breath can become poison. Like a nuclear bomb, the biological weapon threatens such a spectacle of horror — skin boiling with smallpox pustules, eyes blackened with anthrax lesions, the rotting bodies of bubonic plagues — that it can seem the province of fantasy or nightmare or, worse, political manipulation. Yet biological weapons are as old as war itself. The ancient Hittites marched victims of plague into the cities of their enemies; Herodotus described archers’ firing arrows tipped with manure. By the 20th century, nearly every major nation developed, produced and in some cases used a panoply of biological weapons, including anthrax, plague, typhoid and glanders.

A decade after the 9/11 attacks, it is easy to forget the anthrax letters that sprang up just a few weeks later and to dismiss the fear that swept the country as a relic of a fragile moment that already belongs to history. But in the wake of those events, many national-security experts began to reconsider the risk of a biological attack — and reached some unsettling conclusions. Since the collapse of the Soviet Union, most scientists had assumed that the difficulty of building a bioweapon was far beyond the ability of a terror cell, but looking again in the early 21st century, many experts came to believe that advances in laboratory technology brought the science within reach. “What took me three weeks in a sophisticated laboratory in a top-tier medical school 20 years ago, with millions of dollars in equipment, can essentially be done by a relatively unsophisticated technician,” Brett Giroir, a former director at the Defense Advanced Research Projects Agency (Darpa, told me recently. “A person at a graduate-school level has all the tools and technologies to implement a sophisticated program to create a bioweapon.”

Even some nuclear experts began to wonder if the risk of a biological attack had eclipsed the nuclear threat. Graham Allison, the founding dean of Harvard’s John F. Kennedy School of Government and a leading expert on nuclear proliferation, told me: “Nuclear terrorism is a preventable catastrophe, and the reason it’s preventable is because the material to make a nuclear bomb can’t be made by terrorists. But in the bio case — oh, my God! Can I prevent terrorists from getting into their hands anthrax or other pathogens? No! Even our best efforts can’t do that. I think the amazing thing is that one hasn’t seen more bioterrorism, given the relative ease of making a bioweapon and the relative difficulty of defending.”

How a biological attack might unfold depends on a number of variables, including which biological agent is used, the extent of its weaponization, the amount released and the method of delivery. Some agents, like the smallpox virus, are highly contagious and could spread widely from a small release. Others, like the plague and tularemia bacteria, are not typically contagious but are relatively easy to make into wet slurry and disperse. Some of the most vivid descriptions of how such an attack might look come from the national-security exercises used to develop biodefense policy. The exercise briefed to Dick Cheney in 2001, for example, was known as Dark Winter and was coordinated by the Center for Strategic and International Studies and the Johns Hopkins Center for Civilian Biodefense Studies. It took place over two days at Andrews Air Force Base, with former Senator Sam Nunn playing the role of president, David Gergen acting as national-security adviser, the former C.I.A. director James Woolsey leading intelligence and the retired four-star general John Tilelli serving as chairman of the Joint Chiefs of Staff. As the smallpox virus began to appear, first in Oklahoma and then in pockets across the nation, the participants quickly discovered that the country had no standing response plan and only enough vaccine to protect 5 percent of the public. Within weeks, as many as a million people in the United States were estimated dead.

Not all experts are convinced that simulations like Dark Winter offer a realistic view. Milton Leitenberg, a prominent arms-control expert, has argued that the exercise relied on faulty premises to increase the death toll and “assure a disastrous outcome.” In particular, Leitenberg objects to the rate of secondary transmission assumed in the Dark Winter exercise. This is the figure to describe how many additional people each patient would infect, and it is highly contextual, depending on biological traits, like the genetic vulnerability of the target population; social habits, like the number of personal interactions by each victim; and meteorological conditions, like the weather and the time of year. Because the exercise was set in winter, which is favorable to smallpox, and because Americans are not routinely vaccinated, planners assumed a transmission rate of 10 new infections by each victim. Leitenberg says that number should be three. Other estimates vary. The Centers for Disease Control and Prevention uses a range of five to seven; the last comparable cases of smallpox to appear in Europe averaged between 9 and 17; and the authors of a 1999 article in Science magazine used the same figure as Dark Winter. But if Leitenberg is right, the death toll from the exercise would be much lower — most likely in the tens of thousands.

Whatever the transmission rate of smallpox, the more salient question for biodefense may be whether an attack will happen at all. On this, the expertise of microbiologists is limited, but there is surprisingly broad agreement among the officials in charge of national security over the past 10 years. Since 2001, senior members of both the Obama and Bush administrations, who have reviewed classified intelligence, have consistently placed biodefense at or near the top of the national-security agenda. In 2004, a report from the National Intelligence Council warned, “Our greatest concern is that terrorists might acquire biological agents.” Michael Chertoff, the secretary of Homeland Security between 2005 and 2009, told me, “In terms of catastrophic attacks, bio was at the top of the list.” In 2008, the director of national intelligence, Adm. Mike McConnell, described a biological attack as “my personal greatest worry.” In 2009, McConnell’s successor in the Obama administration, Dennis Blair, warned the Senate Select Committee on Intelligence that “the terrorist use of biological agents represents a growing threat.” In November 2009, the National Security Council estimated that a biological attack could place “hundreds of thousands of people” at risk of death and cost more than $1 trillion. Heidi Avery, a top biodefense official in the White House, told me recently that biological terrorism poses “the ultimate asymmetric threat; it should be considered in the same class as the nuclear threat.” And a report by the Congressional Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, formed in 2007, concluded: “To date, the U.S. government has invested most of its nonproliferation efforts and diplomatic capital in preventing nuclear terrorism. The commission believes that it should make the more likely threat — bioterrorism — a higher priority.”

To heighten the nation’s biodefenses, the federal government has invested more than $60 billion since 2001, developing and distributing air sensors, educating doctors about the symptoms of bioterror pathogens and distributing medical supplies for biodefense to hospitals around the country. At the root of these efforts is a list of specific biological agents, known as “material threats,” that have been identified by the Department of Homeland Security as the most urgent pathogens to defend against. These include smallpox, anthrax, ebola, plague and a handful of lesser-known organisms.

Since 2004, the Department of Health and Human Services has overseen a program called Project BioShield to develop and stockpile vaccines and treatments, known collectively as “medical countermeasures,” to defend against the pathogens. After seven years, the achievements of BioShield are measurable. According to Robin Robinson, who directs the countermeasure program at Health and Human Services, there is currently enough smallpox vaccine in the stockpile to inoculate every United States citizen; enough anthrax vaccine to respond to a “three-city attack”; and a variety of therapeutic drugs to treat the infected. Yet many other goals of the program are incomplete and, in some cases, not even begun. After spending hundreds of millions of dollars, for example, to develop a new vaccine for anthrax that would replace the controversial formula developed 50 years ago by the Army — which is known to have serious side effects and has never been approved for children — there is still no new vaccine. There also are no new broad-spectrum antibacterial drugs in the stockpile and no new antivirals. “We don’t even have candidate products” for antivirals, Robinson told me.

Last year, two separate review boards evaluated the state of the country’s biodefense program, and each report came back scathing. The National Biodefense Science Board, a nonpartisan task force created in 2006 to oversee countermeasure development, delivered a 103-page report to the secretary of Health and Human Services, Kathleen Sebelius, describing “lack of urgency,” “lack of coherence,” “lack of prioritization” and “lack of synchronization.” The title of the report was “Where Are the Countermeasures?” And the commission created by Congress in 2007 to evaluate all defenses for chemical, biological, radiological and nuclear threats delivered its final report, offering letter grades in several categories. For attention to the safe storage of toxins, the government received an A. For openness and transparency, a B-minus. For biodefense, the grade was an F.

“The lack of U.S. capability to rapidly recognize, respond and recover from a biological attack is the most significant failure identified in this report card,” the commission wrote. “Especially troubling is the lack of priority given to the development of medical countermeasures — the vaccines and medicines that would be required to mitigate the consequences of an attack.”

Even within the biodefense community, there is a widespread sense that the countermeasure program is failing. Early this year, Sebelius described the effort as “full of leaks, choke points and dead ends,” and in more than 100 interviews with senior officials from each of the federal agencies related to countermeasure development — including past and current program heads at the White House, the Pentagon, the National Institutes of Health and the Departments of Homeland Security and Health and Human Services — I heard an endless series of grim diagnoses on the health of the nation’s biodefenses. As one senior official in the Obama administration put it: “We need a new model. This is never going to work.”

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SINCE THE 1990S, the United States’ approach to biodefense has been redesigned at least three times. Each time, the new approach was presented as a remedy; each time, the remedy failed to cure.

The story that circulates among officials is that the first modern president to focus on biodefense was Bill Clinton in 1998: after staying up all night reading “The Cobra Event,” by Richard Preston, a thriller about a terrorist strike with modified smallpox, Clinton called a high-level meeting of scientists, ordered the F.B.I. to review the plot and began pushing copies of the book on other politicians. By 1999, the White House and Congress had created a new division of the National Pharmaceutical Stockpile, to store medicines for crises. But in the absence of an actual crisis, financing for the stockpile was fairly minimal. By summer 2001, it held only 15 million doses of smallpox vaccine and little else.

After the anthrax letters in October 2001, everything changed: by 2002, spending on biodefense rose to more than $4 billion, from $633 million, with an emphasis on expanding the stockpile. One of the program’s first priorities was to increase the supply of smallpox vaccine. Smallpox is regarded by biodefense experts as the most threatening biological weapon, because it can spread as easily as the flu and kills about one in three victims. To expand the stockpile, the Bush administration called in a legendary epidemiologist. In the 1960s and ’70s, D. A. Henderson led the World Health Organization’s program to eradicate smallpox in nature, chasing outbreaks through villages in Brazil, the mountains of Yugoslavia and the jungles of India before finally containing the last known cases in the Horn of Africa in 1977. Today, smallpox is the only human infectious disease ever eradicated by science.

Returning to public service in 2001, Henderson called in another legend of microbiology, Maj. Gen. Philip K. Russell, a former commander of the Army’s medical research program and a figure so revered that one commanding general was known to keep a bumper sticker on his wall that read, “What would General Russell do?” Between 2001 and 2004, Henderson and Russell, along with leaders at the National Institutes of Health and civilian research laboratories across the country, raced to develop new production techniques and expand the smallpox-vaccine supply. Today, the stockpile holds more than 300 million treatment courses.

Officials at Health and Human Services were also determined to produce and store a large supply of anthrax vaccine, but they were unsatisfied with the existing formula. Some veterans blamed the vaccine for gulf war syndrome, citing research at Tulane University, and after vaccination was made mandatory in 1998, hundreds of service members actually refused the shots. Some resigned from service in order to avoid it; a few were court-martialed for insubordination. In 2002, the most comprehensive study of the vaccine, by the Institute of Medicine at the National Academy of Sciences, concluded that while the vaccine was “reasonably safe,” a new vaccine was “urgently needed.”

Developing a new vaccine is vastly more complicated than increasing the supply of one that exists. In the pharmaceutical industry, the cost to develop a new drug or vaccine averages about $1 billion. To encourage companies into development, the Bush administration in 2003 announced the creation of a special fund within Project BioShield, filled with $5.6 billion for the purchase of countermeasures like a new anthrax vaccine, yet by the middle of 2004, not a single large pharmaceutical company had begun development. “The belief was: Fund it and they will come,” Senator Richard Burr, who is prominent in biodefense, told me. “Well, they didn’t come.” Anthony Fauci, the director of the National Institute of Allergy and Infectious Diseases (N.I.A.I.D.) at the National Institutes of Health, told me $5.6 billion was simply not enough money. “The Mercks and the GlaxoSmithKlines and others looked at it and said, ‘Forget it,’ ” he said.

Officials at Health and Human Services turned to smaller drug companies, instead. In November 2004, they offered the first major contract under BioShield to a young company called VaxGen, based in California. If VaxGen could develop and deliver a new anthrax vaccine, the government promised to purchase 75 million doses for $877 million.

From the outset, the choice of VaxGen proved controversial. The company had never produced a drug before, it had been delisted from Nasdaq a few months earlier for failure to file timely financial statements and it was embroiled in an ethical dispute in Thailand over human testing of another drug. But VaxGen did have certain advantages, not least that it had been working on a new anthrax vaccine for two years already, financed by $100 million from Fauci’s N.I.A.I.D.

To add another layer of confidence to the deal, officials at H.H.S. structured the VaxGen contract with unusually stringent terms. During the proposal process, VaxGen executives submitted a 1,000-point outline to show the approach they hoped to take. H.H.S. officials now made the outline binding: according to the former chief executive of VaxGen, Lance Gordon, officials notified the company two weeks before the deal became public that if VaxGen could not stick to the plan, the company risked breach of contract. In retrospect, Gordon told me, VaxGen never should have taken the terms. “It’s impossible,” he said. “In the history of mankind, nobody has been able to predict 1,000 tasks for hundreds of people over a five-year period. Life doesn’t work that way.”

Vaccines especially don’t work that way. Their development is notoriously complex and requires frequent adjustment as complications arise in the lab. Predictably, within months of signing the contract, VaxGen slipped off schedule and was technically in breach. At the same time, officials at H.H.S. were discovering that the VaxGen contract did not add to the countermeasure program’s appeal: by 2006, the third year of the contract, not one other major project was in development under BioShield.

It was time for a third overhaul. In the summer of 2006, Burr instructed his legislative staff to figure out what was wrong in the countermeasure program. He came to believe that the problem was institutional. If the early research at the N.I.H. was producing valuable leads for new drugs, and the money in Project BioShield offered an incentive at the end of development, then what was missing was an agency in between to help guide companies across what Burr’s staff called the Valley of Death. “What we saw,” Burr says now, “was that we had to become more than a procurer. We had to become a *partner*.” That July, Burr introduced a bill to establish a new agency at H.H.S., known as the Biomedical Advanced Research and Development Authority (Barda), with an annual budget of $1 billion, to finance the development of countermeasures and steer companies through the gantlet of clinical trials and F.D.A. approval. That December, the bill passed both houses of Congress unanimously — but even as executives at VaxGen watched to see how the new agency might help them, H.H.S. announced that the VaxGen contract would be canceled.

Five years later, the cancellation of that contract is still a matter of fierce debate in biodefense circles. Many experts say that the decision had less to do with science than politics. Scott Lilly, a senior fellow at the Center for American Progress, recently studied the role that lobbying may have played in VaxGen’s demise. Between 2004 and 2006, Lilly writes in a new study, the company that produced the old anthrax vaccine, which is now called Emergent BioSolutions, employed an army of lobbyists to undermine the VaxGen contract. “Each time VaxGen’s test results were less than had been hoped for,” the report says, “Emergent pounded VaxGen with a highly orchestrated campaign to overstate the problems and discourage government support of the effort.”

Executives at Emergent acknowledge the campaign against VaxGen but say it was not directed at the company so much as the structure of the BioShield contract. “Our issue was not with respect to VaxGen,” the president of Emergent, Daniel Abdun-Nabi, told me. “It was with respect to the approach of moving to a single supplier with an unproven technology. We thought it was premature. We thought it added risk to the country.” According to Abdun-Nabi, the company’s message to legislators was: “You shouldn’t put all your eggs in one basket. There’s a role for multiple suppliers.” The fact that this lobbying contributed to the implosion of VaxGen and another five years in which Emergent was the only supplier of anthrax vaccine, which has earned the company $1.5 billion, also troubles Abdun-Nabi, he said. “It puts us in a very difficult position to be the sole supplier. I mean, the whole nation is reliant on Emergent. And in one sense, we’re very honored to be in that position, but it’s a tremendous responsibility.”

General Russell, who led the early countermeasure program, told me: “It was Emergent lobbying that killed VaxGen. Period. Emergent bought the Congress. Congress killed VaxGen.” Several current officials share Russell’s view. When I asked one senior biodefense official about the lack of a new anthrax vaccine, the official nearly exploded: “Why don’t we have a second-generation anthrax vaccine? The reason is Emergent lobbying!” Even the director of Barda, Robin Robinson, acknowledged that politics played a role in the decision. “Should we have kept it? I think there’s a long debate,” he said. “They had brought in some really top-flight people in there, and Lance Gordon was really good at judging talent. Unfortunately, there was a lot of political pressure.”

Soon after the VaxGen contract failed, the company folded into another, and Emergent bought the rights to develop the new anthrax vaccine it had spent three years lobbying against. Abdun-Nabi told me his company was still trying to develop that vaccine, but critics question whether Emergent, which signed another contract this month to deliver $1.25 billion more of the old vaccine to the stockpile, is pursuing the replacement vaccine as enthusiastically as possible. “They bought the technology and buried it,” Russell says. “We are five or six years behind where we should be. We should be working on a third-generation vaccine.”

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IF THE PURSUIT OF of a new anthrax vaccine has been halting, the pursuit of many other vaccines has halted altogether. In fact, other than the vaccines for anthrax and smallpox, there are no vaccines in the stockpile for any other agents on the material-threat list, nor are any of those vaccines in the advanced development program, nor will any of them enter the program any time soon.

Robin Robinson, the director of Barda, is a big, easy fellow, with a trim goatee and a light Southern drawl. The first I met him, two years ago, we sat at a long table with his new boss, Nicole Lurie, who had just been appointed by the Obama administration as the assistant secretary for countermeasure development. Lurie had an air of unpretentious surety and a sudden, piercing laugh, and she and Robinson wasted no time trying to hide the failings of their program. Although Barda was established in 2006 with an annual budget of $1 billion, it never actually received the money. In 2006, the agency received $54 million; in 2007, $104 million; in 2008, $102 million; and by the time I sat down with Robinson and Lurie in 2009, Barda had received in four years about half of what it was intended to receive in one. Lurie reminded me of the high cost required to develop drugs. “What does it take in the pharmaceutical industry?” she asked. “A billion dollars per product! The advanced development part of that might be about $350 million, so that’s the part that we should be funded for.”

“For each product!” Robinson said.

“For each product,” Lurie agreed. “So, we’re nowhere near it. We’re nowhere near the level that we need to be, to be able to protect the American public.”

In the two years since that conversation, financing for Barda has gone up, but with many of the goals still incomplete and criticism pouring in — two weeks ago, the Bipartisan W.M.D. Terrorism Research Center in Washington gave the agency a D for performance — the affinity between Robinson and Lurie is less apparent. Lurie, for example, has removed from Barda all contracting officers, instructing them to report to her instead of Robinson. This many seem minor, but companies working with Barda suggest that it has led to ballooning bureaucracy at an agency that was specifically created to attract business. “Now you really have two bosses,” Eric Richman, the C.E.O. of PharmAthene, which is one of four companies still working on a new anthrax vaccine, told me. “We actually spend as much time managing our contracts as we do developing our drugs. It’s a real burden.” Other C.E.O.’s echoed Richman’s concern, and friends of Robinson’s suggest that the move has compromised his ability to lead the program effectively. “This becomes very frustrating for him,” an H.H.S. official told me. “What does he tell the companies — ‘Now I have to go ask for permission’?”

But the gap between Robinson and Lurie also seems to extend to basic matters of policy and fact. Nowhere is the division in countermeasure development more apparent than on the question of vaccine development. Because a vaccine is only effective against a single pathogen, and because development is so expensive, Barda has focused much of its energy on therapeutic drugs — which may not offer protection to the healthy but can treat a broad range of diseases.

When I visited Barda recently to speak with Robinson and Lurie again, I heard two very different explanations for the move away from vaccines. Lurie described the decision as an unfortunate but necessary concession to the budget. “You’d like to have vaccines further along in the pipeline for all the threats we have, and you’d like to have a way to manufacture them quickly,” she told me. “But I don’t think there’s anywhere near enough money in the system.” Yet Robinson insisted that the move would have happened even if financing was not an issue. “There are only two biothreats — smallpox and anthrax — that we feel vaccination is the appropriate way to go,” he said. When I asked if that meant he would not even *want* a vaccine for other agents, like tularemia, he said: “I don’t think there’s a case to be made for that. What we’re doing is therapeutics.”

The debate over vaccine development is by no means limited to Robinson and Lurie. Ten years after the anthrax attacks, and with more than $16 billion committed to countermeasure development, there is still broad disagreement among officials over whether the stockpile should include other vaccines. When I asked Tara O’Toole, who leads the Science and Technology Directorate at the Department of Homeland Security (where the list of biological material threats is created and the countermeasure process begins) whether she believed the stockpile should include vaccines for other agents, she snapped: “Vaccines are essential. If there’s a bio attack, people are going to want their children vaccinated. It’s the only defense against reload.”

By “reload,” O’Toole was referring to a concept first developed by Richard Danzig, who is a former secretary of the Navy under Bill Clinton and one of the leading intellectuals in biodefense. Danzig currently serves as chairman of the board at the Center for a New American Security, sits on the Defense Policy Board at the Pentagon and is a member of the President’s Intelligence Advisory Board. The reload concept, he told me recently, describes a fundamental difference between biological weapons and all other weapon types. “When we talk about terrorists’ acquiring a nuclear weapon, we’re talking about just that — they’re acquiring a weapon,” Danzig said. “With biological weapons, we’re talking about acquiring the ability to *produce* weapons. So if you acquire the ability to produce 100 grams of anthrax, you can keep doing that. You really have to think about biology as potentially the subject of a *campaign*, where somebody keeps attacking, rather than a one-shot incident.” When I asked Danzig how the reload concept influences the debate over vaccines, he said: “You can reassure people that there will be antibiotics available for them, and you can keep producing ever greater numbers of antibiotics. But you can see that if you had the ability to vaccinate people and protect them, it would provide a larger degree of protection. So to the extent that these things come to pass, I think there will be more pressure to develop vaccines.”

Brett Giroir, who directed the Defense Sciences Office at Darpa and is now vice chancellor for strategic initiatives at Texas A&M University, shared Danzig and O’Toole’s belief that other vaccines should be developed. “Vaccines are critical components of a biodefense posture, and anybody who thinks they’re not isn’t thinking seriously about how we approach this,” Giroir told me. “If we got sprayed with tularemia in College Station and a biodefense sensor went off, that would be an ideal opportunity for vaccine.”

Tularemia is an especially difficult case. Found naturally in animals around the world, it can be transmitted during butchering and spread by ticks. Although it is highly infectious, it is seldom lethal. But during the 1950s and ’60s, Army researchers became interested in weaponizing tularemia.

It has been more than 40 years since the American bioweapons program shut down, and many of the details remain classified. Last fall, the final director of the program, William Patrick, died of cancer at 84, but in the final months of Patrick’s life, Robert Kadlec, the former biodefense chief in the second Bush White House, and Joel McCleary, a former aide to Jimmy Carter, spent hundreds of hours interviewing him on the history and accomplishments of the program. Over the past year, McCleary has delivered a presentation on the bioweapons program to members of Congress, the White House national-security staff and senior officials at the Departments of Defense, Homeland Security and Health and Human Services. One night this summer, I stopped by McCleary’s house to see the presentation myself.

Finding McCleary’s home in Georgetown was a bit like passing through the looking glass. I started down a cheery row of town houses, but as I approached the right number, I realized there was no house — just a gravel path that trailed away from the street with vines and shrubs surrounding it. I followed the path and came to a gate and, finding no bell or button, fiddled with an iron latch to enter a lush green courtyard shaded by a walnut tree. It was as if I made a wrong turn in Georgetown and wandered into the English countryside. In the center of the yard sat a small cottage, as wide as it was tall. I rang the buzzer a few times and rapped a brass knocker on the door, and after a few minutes, McCleary burst outside in a pair of bright red slippers. He is a large man, brimming with energy, and we stood in his yard admiring the flowers for a moment, then retreated inside to review the last known record of the American quest for a microbial army.

It was immediately apparent that the Army’s research on tularemia went far beyond what is commonly known. In hundreds of experiments, scientists weaponized the bacteria to extraordinary potency and then proceeded to mix the slurry with another agent, known as S.E.B., which multiplied the effects logarithmically, shattering the human immune system just as the tularemia plunged in. In several large outdoor tests, scientists drifted clouds of tularemia over cages of live monkeys to evaluate the infectivity. At high doses, the weaponized bacteria were determined to have an incubation period of just a few hours. If left untreated, the combination of tularemia and S.E.B. was projected to cause death within the same period. Patrick called these “killing winds.” In one video, he calmly warned, “Between 50 and 60 pounds of freeze-dried tularemia produced in our production facility would eliminate about 60 percent of the population of London, England.”

When I asked Robinson, who knew Patrick and has seen McCleary’s presentation, whether the extreme weaponization of tularemia suggests the limits of a therapeutic response and a role for vaccination, Robinson became circumspect. “I’ve got to be careful on this one,” he said, “because there is classified information.” Then he went on to explain that Barda is considering the possibility of such an attack but still hopes to respond by treating the sick, rather than by vaccinating the healthy. “What we’re doing,” he reiterated, “is therapeutics.”

To date, the United States has never developed an original vaccine for tularemia. Instead, for the past 50 years, scientists who study tularemia must be vaccinated with a weakened version of the bacterium, which was first obtained through mysterious means from the Soviet Union during the early days of the cold war and then modified. But today, supplies of the live vaccine are running thin. In fact, they are virtually gone. Although some lab workers still receive it, the official literature of the C.D.C. lists the tularemia vaccine as “not currently available,” and Karl Klose, who runs a tularemia lab at the University of Texas, San Antonio, told me that federal research into tularemia has dwindled over the past few years. “They’re basically just abandoning the effort,” he said. “It’s like the A.D.D. has kicked in.”

There is one vaccine candidate for tularemia currently in development. Although it is not a novel product and represents a different formulation of the old Soviet vaccine, it is currently in clinical trials at several locations around the country. Typically, the point at which a product becomes eligible for all the support and financing of the advanced development program at Barda is when the product enters Phase II testing. The new tularemia product entered Phase II this fall, but without interest from Barda, it has remained under the auspices of the early development program at N.I.A.I.D. If this seems organizationally confusing, it makes sense in at least one way. Since 2002, the financing for N.I.A.I.D. has outpaced that for advanced development by as much as 15 to 1. Partly, this is a result of N.I.A.I.D.’s being an older, established institution; partly it is a consequence of the institute’s powerful director, Fauci, who has led the agency since 1984 and is sometimes called the J. Edgar Hoover of biology. On the heels of the anthrax attacks in 2001, Fauci vigorously promoted N.I.A.I.D. as the best agency to lead countermeasure development and since 2003 has received about $1.6 billion each year for biodefense research. Some of that money goes into projects like the tularemia study, which would not be financed otherwise. Much more has gone into other kinds of projects entirely. A close look at Fauci’s budget last year shows that the director has steered about 70 percent of his biodefense funds toward research into natural disease, including AIDS, SARS and malaria — choosing to define “biodefense” however he likes.

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THE OFFICES OF N.I.A.I.D. building is mostly remarkable for how unremarkable it is: the exterior is smudged with mildew and laced with steel electrical conduit, and the corridors are dim and yellowing with age. One day recently, as I stood with Fauci in his seventh-floor office, he paused to admire the dishevelment around him. “Look at this!” he cried, running a hand over the dented surface of his desk. “I inherited this from my predecessor!” He pointed to an old sofa in the corner. “If there’s ever a Congressional investigation, I don’t want them to say I spent it all on myself!”

Fauci is a small, muscular man with an outsize manner. He is from New York in the most obvious ways. After three decades leading one of the most prestigious research programs on earth, he retains a booming Brooklyn patois that sounds, even when he is discussing matters of virulence and pathogenesis, as if he is shouting a pizza order to the back. As we sat together in his library, he explained that although he has overseen most federal spending on countermeasure development since 2002, he does not fully embrace the mission. The list of material threats, he said, reflects an outmoded way of thinking. “It’s less of a priority to say, ‘O.K., now here’s our menu for the Strategic National Stockpile,’ ” Fauci said. “We call that the military model.” He added, “Do we have this little thing in the stockpile or not? I don’t judge the safety of the country on that basis. To me, the idea of a naturally occurring threat is infinitely greater.”

Many agents on the list, Fauci said, were a product of the cold war, when the U.S. military kept a list of “Category A” pathogens being developed by the Soviet bioweapons program. “So when the decision was made to make an investment into developing countermeasures,” he told me, “that was essentially their matrix from the beginning: these are what we know the Soviets had. We know they have stockpiles. This is what we’re going to protect against.” He mentioned the bacterium glanders, which was reportedly used by Germany in World War I and by Japan in World War II but seemed to Fauci a comparatively minor threat today. “I think the unknown threat of a mutant microbe is infinitely greater than someone coming and dropping a glanders on us!” he said. “I mean, seriously! Get real about that!”

When I mentioned Fauci’s comments to O’Toole, who oversees the biological-threat list at the Department of Homeland Security, she said he was “completely wrong” to suggest that the list is rooted in cold-war thinking. “We use current intelligence as an integral part of every material-threat determination,” O’Toole said. “I’m surprised anyone in N.I.H. would think otherwise, particularly since the details of the material-threat determination process are briefed at the White House. It does raise a troubling question about how seriously N.I.H. is engaged in the biodefense mission.”

Whether or not Fauci is right about the origins of the material-threat list, his observation that a natural outbreak is more likely than a biological attack is difficult to dispute. Each year, seasonal flu leads to about 200,000 hospitalizations and several thousand deaths in the United States. Although a biological attack could be much larger, there is no certainty that such an attack will ever happen. How to balance the unlikely but catastrophic potential of bioterror with the steady advance of natural disease is one of the most puzzling challenges for biodefense policy going forward.

To some extent, this is also a question of framework. Fundamentally, the countermeasure program is a public-health project, yet with its reliance on classified intelligence and secret-threat assessments, it is more closely aligned in many respects with the methodology of other national-security projects. Where biodefense fits into government bureaucracy will have a profound impact on its financing. In public health, the $12 billion necessary to develop new vaccines for a dozen material-threat agents can seem a towering, even absurd, figure. Within the realm of national security, the same amount represents less than a quarter of the cost of the military’s experiment with the V-22 Osprey heli-plane, or about what the U.S. will spend in Afghanistan between now and Christmas.

“We spent trillions of dollars in the cold war preparing for a potential nuclear exchange that never occurred,” says Kenneth Bernard, who was the senior biodefense official in the Clinton White House from 1998 to 2001 and then again in the Bush White House from 2002 to 2005. “We’re not spending that kind of money to prevent a bio attack because the people who work on biology are not trained to think like that. They are much more interested in dealing with the three particular strains of influenza that are in the dish this year than they are in thinking about a plague attack in 2018.”

Even if the leadership and financing for biodefense were to shift toward a national-security framework, the task would still require complex coordination among agencies with expertise in disparate spheres. This challenge is not made easier by the personal hostility that has emerged among many current program heads — some of whom have close ties to the competing companies they oversee. In the course of several months of reporting, I heard senior officials from each of the major countermeasure agencies question the motives and professional credentials of the others, sometimes in a manner involving spittle. At times it seemed that the most virulent pathogen in biodefense was mutual hostility, and everybody had it.

Senior officials in the Obama administration say that the president is committed to improving coordination on biodefense and is entering a fourth major overhaul of the countermeasure enterprise. Last year, officials from the countermeasure agencies met weekly with the White House staff to discuss the merits and drawbacks of the current approach. Officials who attended those meetings say the administration hopes to develop a more “nimble, flexible” program, in which a single drug can treat multiple diseases and a single manufacturing plant can produce multiple drugs. If that plan, after 10 years and hundreds of millions of dollars trying to create a new anthrax vaccine that is still not ready, sounds optimistic, it is. Whether it is also realistic, only time will tell. Critics are quick to note that, three years after taking office, the administration is still holding meetings and announcing bold new plans.

A number of former and current officials also point out that no one in the Obama White House is focused exclusively on biodefense. In both the Clinton and Bush administrations, there was a biodefense director whose primary job was to coordinate the agencies. Today, there are four senior White House officials with partial responsibility for biodefense, but each of them is also responsible for a raft of other issues, like natural disasters, terrorism and large-scale accidents like the Deepwater Horizon oil spill. Whatever you think U.S. biodefense policy should be, it is difficult to imagine that it would not benefit from clear, central leadership. Kenneth Bernard, the biodefense czar in both the Clinton and Bush administrations, told me, “The only way that you can get all of those people in the room is to call them into the White House, and to have a coordinating group under a single person.” Robert Kadlec, who was the senior official for biodefense in the second Bush term, said, “Unless someone makes this a priority, it’s a priority for no one.”

Randall Larsen, who first smuggled a tube of weaponized powder into the meeting with Dick Cheney 10 years ago — and went on to become the executive director of the Congressional Commission on Weapons of Mass Destruction — said: “Today, there are more than two dozen Senate-confirmed individuals with some responsibility for biodefense. Not one person has it for a full-time job, and no one is in charge.”

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